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# Leadership in separations technology for the life sciences

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# Glass Microfiber Binder Free

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### Grade GF/A: 1.6 µm

Offers fine particle retention and high flow rate, as well as good loading capacity. Used for high-efficiency general purpose laboratory filtration, including water pollution monitoring of effluents, for filtration of water, algae and bacteria cultures, foodstuff analyses, protein filtration and radioimmunoassay of weak ß emitters. Recommended for gravimetric determination of airborne particulates, stack sampling and absorption methods of air pollution monitorina

Disposable Filter Funnel formats.

# This filter is also available in the FilterCup and

# Grade GF/B: 1.0 um

Three times thicker than GF/A with higher wet strength and significantly increased loading capacity. Combines fine particle retention with good flow rate. Particularly useful where liquid clarification or solids quantification is required for heavily loaded fine particulate suspensions. Can be used as a finely retentive membrane prefilter. Used in LSC techniques where high loading capacity is required.

#### Grade GF/C: 1.2 um

Combines fine particle retention with good flow rate. The standard filter in many parts of the world for the collection of suspended solids in potable water and natural and industrial wastes.

Fast and efficient clarification of aqueous liquids containing low to medium levels of fine particulates. Widely used for cell harvesting, liquid scintillation counting and binding assays where more loading capacity is required.

This filter is available in the FilterCup format.

#### Grade GF/D: 2.7 um

Considerably faster in flow rate and overall filtration speed than cellulose filter papers of similar particle retention. The filter is thick and consequently exhibits a high loading capacity. Designed as a membrane prefilter and available in sizes to fit most holders. GF/D will provide good protection for finely retentive membranes. Can be used in combination with GF/B to provide very efficient graded prefilter protection for membranes.

## Grade GF/F: 0.7 um

This high-efficiency filter will retain fine particles down to 0.7 µm. Unlike membrane filters with a comparable retention value, it has a very rapid flow rate and an extremely high loading capacity.

Because of the tight specification of 0.6 µm - 0.8 µm particle retention and pure borosilicate class structure, GF/F is the material upon which the EPA Method TCLP 1311 for Toxicity Characteristic Leaching Procedure was developed. It remains today the filter of choice.

Recommended for DNA binding and purification. Very effective in filtering finely precipitated

# Whatman Part of GE Healthcare Search

Support Documentation

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Overview

Printable Version

proteins, GF/F can be used in conjunction with GF/D as a prefilter for the successful clarification of extremely 'difficult' biochemical solutions and fluids, and nucleic acids.

This filter is available in the FilterCup and Disposable Filter Funnel format.

#### Grade 934-AH: 1.5 um

The fine particle retention of this popular grade is superior for its high retention efficiency at high flow rates and its high loading capacity. This is a smooth surface, high-retention borosilicate glass microfiber filter which withstands temperatures over 500° C. Used for determining total suspended solids in water, removal of turbidity and filtration of bacterial cultures. Grade 934-AH is used for a wide range of laboratory applications. It is recommended for water pollution monitoring, cell harvesting, liquid scintiliation counting and air pollution monitoring.

#### Quartz Filter -- Grade QM-A: 2.2 um

High-purity quartz (SiO2) microfiber filters are used for air sampling in acidic gases, stacks filter and aerosols, particularly at high temperatures up to 500° C and in PM-10 testing. Because of the low level of alkaline earth metals, 'artifact' products of sulfates and nitrates (from SO2 and NO2) are virtually eliminated. OM-A, sequentially numbered according to EPA standards, is suitable for most applications. Please refer to the Air Sampling Filter/Quartz Filters section for ordering information.

#### Grade EPM 2000: 2.0 µm

EPM 2000 has been developed especially for use in high volume air sampling equipment that collects atmospheric particulates and aerosols. It is manufactured from 100% pure borosilicate glass of special purity enabling detailed chemical analysis of trace pollutants to take place with the minimum of interference or background. See <u>Air Sampling Filter/Quartz Filters section</u> for ordering details.

# Grade GMF 150: 1 µm or 2 µm

The Whatman GMF 150 is a unique multilayer glass microfiber filter with a coarse top layer (10 µm) and meshed with a finer layer of 1 µm or 2 µm. Manufactured from 100% borosilicate glass microfiber, the filter is binder free. It is the ideal prefilter for higher particulate loading capacity with faster flow rates. See <u>GMF 150</u> section for ordering information.

Typical Properties - Binder-Free Glass Microfiber Grades

Grade	Description	Particle Retention in Liquid (µm)	Filtration Speed Herzberg(s)	Air Flow (s/100 mL/in²)	Typical Thickness (µm)	Basis Welght (g/m²)
GF/A	Fast, High Loading	-1.6*	62	4.3	260	53
GF/B	Medium to Fast, Very High Loading	1.0*	195	12	675	143
GF/C	Medium to Fast, High Loading	1.2*	100	6.7	260	53
GF/D	Fast, Very High Loading	2.7	41	2.2	675	121
GF/F	Medium, High Loading	0.7*	325	19	420	75
934-AH	Fast, High Loading	1.5*	47	3.7	435	64
QM-A	Quartz	2.2*	-	6.4	450	85
EPM2000	Used in PM-10 Air Monitoring	2.0*	-	4.7	450	85
GMF 150-1 μm	Multilayer	1.2*	-	3.1	730	139
GMF 150-2 μm	Multilayer	2.4*	-	1.5	750	149

\*Particle Retention Rating at 98% efficiency

Ordering Information - Glass Microfiber Binder Free

Catalog Number Description

G	ra	d	0	G	F.	Δ

1820-8013	Grade GF/A Circles, 13 mm 100/pk
1820-021	Grade GF/A Circles, 21 mm 100/pk
1820-024	Grade GF/A Circles, 24 mm 100/pk
1820-025	Grade GF/ACircles, 25 mm 100/pk
1820-030	Grade GF/A Circles, 30 mm 100/pk
1820-037	Grade GF/A Circles, 37 mm 100/pk
1820-042	Grade GF/A Circles, 42.5 mm 100/pk
1820-047	Grade GF/A Circles, 47 mm 100/pk
1820-050	Grade GF/A Circles, 50 mm 100/pk
1820-055	Grade GF/A Circles, 55 mm 100/pk
1820-060	Grade GF/A Circles, 60 mm 100/pk
1820-061	Grade GF/A Circles, 60 mm with reinforced rim 50/pk
1820-070	Grade GF/A Circles, 70 mm 100/pk
1820-6537	Grade GF/A Circles, 81 mm 100pk
1820-090	Grade GF/A Circles, 90 mm 100/pk
1820-110	Grade GF/A Circles, 110 mm 100/pk
1820-125	Grade GF/A Circles, 125 mm 100/pk
1820-150	Grade GF/A Circles, 150 mm 100/pk
1820-240	Grade GF/A Circles, 240 mm 100/pk
1820-866	Grade GF/A Sheets, 8 x 10 inches 100/pk
1820-915	Grade GF/A Sheets, 460 x 570mm 25/pk
1600-820	Grade GF/A FilterCup, (Requires FilterCup Stem ,Catalog # 1600-900) 25/pk
1922-1820	Disposable Filter Funnel 25ml, GF/A 50/pk
Grade GF/B	
1821-019	Grade GF/B Circles, 19.1 mm 50/pk
1821-021	Grade GF/8 Circles, 21 mm 100/pk
1821-024	Grade GF/8 Circles, 24 mm 100/pk
1821-025	Grade GF/B Circles, 25 mm 100/pk
1821-037	Grade GF/B Circles, 37 mm 100/pk
1821-042	Grade GF/B Circles, 42.5 mm 100/pk
1821-047	Grade GF/B Circles, 47 mm 100/pk
1821-055	Grade GF/B Circles, 55 mm 100/pk
1821-070	Grade GF/B Circles, 70 mm 100/pk
1821-090	Grade GF/B Circles, 90 mm 25/pk
1821-110	Grade GF/B Circles, 110 mm 25/pk

1821-125	Grade GF/8 Circles, 125 mm 25/pk
1821-150	Grade GF/B Circles, 150 mm 25/pk
1821-185	Grade GF/B Circles, 185 mm 25/pk
1821-293	Grade GF/B Circles, 293 mm 25/pk
1821-914	Grade GF/B Sheets, 460 x 570 mm 5/pk
1821-915	Grade GF/B Sheets, 460 x 570 mm 25/pk
Grade GF/C	
1822-021	Grade GF/C Circles, 21 mm 100/pk
1822-024	Grade GF/C Circles, 24 mm 190/pk
1822-025	Grade GF/C Circles, 25 mm 100/pk
1822-6580	Grade GF/C Circles, 25 mm 400/pk
1822-037	Grade GF/C Circles, 37 mm 100/pk
1822-042	Grade GF/C Circles, 42.5 mm 100/pk
1822-047	Grade GF/C Circles, 47 mm 100/pk
1822-050	Grade GF/C Circles, 50 mm 100/pk
1822-055	Grade GF/C Circles, 55 mm 100/pk
1822-070	Grade GF/C Circles, 70 mm 100/pk
1822-090	Grade GF/C Circles, 90 mm 100/pk
1822-100	Grade GF/C Circles, 100 mm 100/pk
1822-9916	Grade GF/C Circles, 100 mm Individually bagged 100/pk
1822-110	Grade GF/C Circles, 110 mm 100/pk
1822-125	Grade GF/C Circles, 125 mm 100/pk
1822-142	Grade Circles, 142 mm 100/pk
1822-150	Grade Circles, 150 mm 100/pk
1822-849	Grade GF/C Sheets, 102 x 254 mm 50/pk
1822-866	Grade GF/C Sheets, 8 x 10 inch 100/pk
1822-914	Grade GF/C Sheets, 460 x 570 mm 5/pk
1822-915	Grade GF/C Sheets, 460 x 570 mm 25/pk
1600-822	Grade GF/C FilterCup, (Requires FilterCup Stem ,Catalog # 1600-900) 25/pk
1922-1822	Disposable Filter Funnel 25ml, GF/C 50/pk
Grade GF/D	
1823-007	Grade GF/D Circles, 7 mm 100/pk
1823-010	Grade GF/D Circles, 10 mm 100/pk
1823-021	Grade GF/D Circles, 21 mm 100/pk
1823-024	Grade GF/D Circles, 24 mm 100/pk
1823-025	Grade GF/D Circles, 25 mm 100/pk

1823-035	Grade GF/D Circles, 35mm 100/pk
1823-042	Grade GF/D Circles, 42.5 mm 100/pk
1823-047	Grade GF/D Circles, 47 mm 100/pk
1823-055	Grade GF/D Circles, 55 mm 100/pk
1823-070	Grade GF/D Circles, 70 mm 100/pk
1823-090	Grade GF/D Circles, 90 mm 25/pk
1823-110	Grade GF/D Circles, 110 mm 25/pk
1823-125	Grade GF/D Circles, 125 mm 25/pk
1823-142	Grade GF/D Circles, 142 mm 25/pk
1823-150	Grade GF/D Circles, 150 mm 25/pk
1823-257	Grade GF/D Circles, 257 mm 25/pk
1823-915	Grade GF/D Sheets, 460 x 570 mm 25/pk
Grade GF/F	
1825-0134	Grade GF/F Circles, 13 mm 400/pk
1825-021	Grade GF/F Circles, 21 mm 100/pk
1825-024	Grade GF/F Circles, 24 mm 100/pk
1825-025	Grade GF/F Circles, 25 mm 100/pk
1825-037	Grade GF/F Circles, 37 mm 100/pk
1825-042	Grade GF/F Circles, 42.5 mm 100/pk
1825-047	Grade GF/F Circles, 47 mm 100/pk
1825-055	Grade GF/F Circles, 55 mm 100/pk
1825-070	Grade GF/F Circles, 70 mm 100/pk
1825-090	Grade GF/F Circles, 90 mm 25/pk
1825-110	Grade GF/F Circles, 110 mm 25/pk
1825-125	Grade GF/F Circles, 125 mm 25/pk
1825-142	Grade GF/F Circles, 142 mm 25/pk
1825-150	Grade GF/F Circles, 150 mm 25/pk
1825-257	Grade GF/F Circles, 257 mm 25/pk
1825-293	Grade GF/F Circles, 293 mm 25/pk
1825-915	Grade GF/F Sheets, 460 x 570 mm 25/pk
1600-825	Grade GF/F FilterCup, (Requires FilterCup Stem ,Catalog # 1600-900) 25/pk
Grade 934-AH	
1827-021	Grade 934-AH Circles, 21 mm 100//pk
1827-024	Grade 934-AH Circles, 24 mm 100/pk
1827-025	Grade 934-AH Circles, 25 mm 100/pk
1827-027	Grade 934-AH Circles, 27 mm 100/pk

1827-028	Grade 934-AH Circles, 28 mm 100/pk
1827-030	Grade 934-AH Circles, 30 mm 100/pk
1827-032	Grade 934-AH Circles, 32 mm 100/pk
1827-035	Grade 934-AH Circles, 35 mm 100/pk
1827-037	Grade 934-AH Circles, 37 mm 100/pk
1827-042	Grade 934-AH Circles, 42.5 mm 100/pk
1827-047	Grade 934-AH Circles, 47 mm 100/pk
1827-055	Grade 934-AH Circles, 55 mm 100/pk
1827-070	Grade 934-AH Circles, 70 mm 100/pk
1827-132	Grade 934-AH Circles, 81 mm 100/pk
1827-082	Grade 934-AH Circles, 82 mm 100/pk
1827-085	Grade 934-AH Circles, 85 mm 100/pk
1827-090	Grade 934-AH Circles, 90 mm 100/pk
1827-105	Grade 934-AH Circles, 105 mm 100/pk
1827-110	Grade 934-AH Circles, 110 mm 100/pk
1827-125	Grade 934-AH Circles, 125 mm 100/pk
1827-150	Grade 934-AH Circles, 150 mm 100/pk
1827-185	Grade 934-AH Circles, 185 mm 100/pk
1827-240	Grade 934-AH Circles, 240 mm 100/pk
1827-320	Grade 934-AH Circles, 320 mm 100/pk
1827-262	Grade 934-AH Sheets, 1.5 x 9.5 inches 100/pk
1827-808	Grade 934-AH Sheets, 2 x 12 Inches 100/pk
1827-866	Grade 934-AH Sheets, 8 x 10 inches 100/pk
1827-889	Grade 934-AH Sheets, 12 x 15 inches 100/pk
1827-957	Grade 934-AH Sheets, 19 x 28 Inches 100/pk
FilterCup Stem	
1600-900	FilterCup Stem 1/pk

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